

REMARKS / ARGUMENTS

Status of Claims

Claims 1-42 are pending in the application. Claims 29-42 are withdrawn from consideration. Claims 1-28 are rejected. Applicant has amended Claims 1, and 3-22, canceled Claims 29-42 without prejudice, and added new Claims 43-47, leaving Claims 1-28, and 43-47 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §102(b) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Rejections Under 35 U.S.C. §102(b)

Claims 1-28 stand rejected under 35 U.S.C. §102(b) as being anticipated by DiPierno Bosco et al. (U.S. Patent No. 6,103,409, hereinafter DiPierno Bosco).

Regarding Claims 1-12, the Examiner comments that DiPierno Bosco teaches a method and apparatus for monitoring and controlling the operation of proton exchange membrane fuel cells, with specific reference being made to an electrochemical fuel cell apparatus as disclosed at col. 3, line 65-col. 5, line 62, and Figure 1. (Paper 12012003, page 2-3). The Examiner further comments that Claims 1-12 recite functional limitations, and that where the structure recited in a reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent, and a prima facie case of either anticipation or obviousness has been established. (Paper 12012003, page 3). The Examiner also comments that Claims 1-12 are replete with process or use limitations, which do not further delineate the structure of the claimed apparatus from that of the prior art and are accorded no patentable weight to the apparatus. (Paper 12012003, page 4).

Regarding Claims 13-28, the Examiner alleges that DiPierno Bosco teaches all of the structure of the apparatus provided in the claimed method, which merely recites the conventional operation of that apparatus, and that if a prior art device carries out the

claimed process during normal operation, then the prior art device anticipates the claimed process. (Paper 12012003, page 5).

Applicant traverses these rejections for the following reasons.

DiPierno Bosco discloses a method and apparatus for monitoring H₂-O₂ PEM fuel cells to detect and correct flooding. (Abstract). The electrochemical fuel cell apparatus of DiPierno Bosco includes fuel cells 4, an H₂ supply manifold 26, a sensing apparatus 32, and a computer 42, 48. (col. 3, line 65-col. 5, line 62, and Figure 1).

Notably absent from DiPierno Bosco is the disclosure of *an electrical energy source* configured for providing *a quantity of electrical energy* to the electrochemical cell, and a computer *in operable communication with a sensing apparatus and the electrical energy source*. The computer including: a memory device configured to store a first operational parameter, and a processor configured to receive a digital representation of an output signal and a first operational parameter, *the processor configured to compare the digital representation of the output signal to the first operational parameter, and to regulate the quantity of energy provided to the electrochemical cell in response thereto*.

Furthermore, DiPierno Bosco is notably absent the disclosure of an electrochemical cell having *an electrolysis cell* and *a computer configured to regulate a quantity of energy provided to the electrolysis cell in response to a comparison between an output signal and a first operational parameter*.

Applicant respectfully submits that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference*.” *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, “[t]he identical invention must be shown in as complete detail as is contained in the *** claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements “arranged as in the claim.” *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Missing elements may not be

supplied by the knowledge of one skilled in the art or the disclosure of another reference. Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Regarding Claims 1-12

Applicant has amended Claim 1 to include: an electrochemical cell; an electrical energy source configured for providing a quantity of electrical energy to said electrochemical cell; a sensing apparatus in operable communication with a gas output from said electrochemical cell, said sensing apparatus adapted to provide an output signal indicative of a parameter of said gas output; and a computer in operable communication with said sensing apparatus and said electrical energy source, said computer including: a memory device configured to store a first operational parameter, and a processor configured to receive a digital representation of said output signal and said first operational parameter, said processor configured to compare said digital representation of said output signal to said first operational parameter, and to regulate said quantity of energy provided to said electrochemical cell in response thereto.

Dependent claims inherit all of the limitations of the parent claim.

Applicant has further amended Claims 3-12 to include a processor that is structurally adapted to provide defined functions, and with such adaptation, Applicant respectfully submits that where a processor is adapted, or programmed in a certain way, to perform a certain function, then a special purpose processor, or structure composed thereof, is created that does delineate structure having patentable distinction over prior art not so adapted.

In comparing DiPierno Bosco with the instant invention, Applicant respectfully submits that Claims 1-12 include elements that are absent from DiPierno Bosco. Specifically, Applicant submits that DiPierno Bosco is absent ***an electrical energy source configured for providing a quantity of electrical energy to said electrochemical cell, and a processor adapted to provide defined functions.***

In view of the structural differences between DiPierno Bosco and the claimed invention, Applicant submits that DiPierno Bosco does not teach a structure that is a

substantially identical structure to the claimed invention, and therefore cannot be presumed to inherently have the claimed properties or functions. Accordingly, a prima facie case of either anticipation or obviousness, as alleged by the Examiner, cannot be established.

Accordingly, Applicant respectfully submits that DiPierro Bosco does not disclose each and every element of the claimed invention and discloses a substantially different invention from the claimed invention, and therefore cannot be anticipatory.

Regarding Claims 13-28

Applicant has amended Claim 13 to include a method of: sensing a parameter of said gas output and creating a sensed signal indicative of said parameter; retrieving a predetermined value and a predetermined variance from a memory device; comparing said sensed signal to said predetermined value; providing a signal to said electrical source in response to said sensed signal differing from said predetermined value by an amount greater than said predetermined variance; and adjusting an output of said electrical source in response to said signal to said electrical source.

Dependent claims inherit all of the limitations of the parent claim.

Applicant has also amended Claims 14-22 to more particularly describe the subject matter that Applicant considers to be the invention.

While the Examiner alleges that DiPierro Bosco teaches all of the structure of the apparatus provided in the claimed method, and alleges that the claimed method merely recites the conventional operation of that apparatus, Applicant respectfully submits that the Examiner has not stated with specificity where in DiPierro Bosco such elements of the claimed invention may be found. Applicant has noted above regarding Claims 1-12 that DiPierro Bosco is absent elements of the claimed invention, and therefore cannot disclose an apparatus substantially similar to the claimed apparatus for carrying out the claimed method during normal operation, and therefore cannot anticipate the claimed invention.

Accordingly, Applicant respectfully submits that DiPierno Bosco does not disclose each and every element of the claimed invention and discloses a substantially different invention from the claimed invention, and therefore cannot be anticipatory.

Regarding new Claims 43-47

Applicant has added new Claims 43-47 that are directed to an electrochemical cell system comprising: *an electrolysis cell configured to receive electrical energy and to produce hydrogen gas; an electrical energy source* configured to provide a quantity of electrical energy to said electrolysis cell; a sensing apparatus in operable communication with a gas output from said electrolysis cell, said sensing apparatus adapted to provide an output signal indicative of a pressure of said gas output; and *a computer in operable communication with said sensing apparatus and said electrical energy source*, said computer including: a memory device configured to store a first operational parameter, and *a processor configured to receive a digital representation of said output signal and said first operational parameter, said processor configured to compare said digital representation of said output signal to said first operational parameter, and to regulate said quantity of energy provided to said electrolysis cell in response thereto.*

Support for an electrolysis cell that is configured and controlled as claimed may be found in the specification as originally filed, and is not anticipated by DiPierno Bosco, which is specifically directed to a fuel cell and a method and apparatus for the detection and correction of fuel cell flooding.

In view of the amendment and foregoing remarks, Applicant submits that DiPierno Bosco does not disclose each and every element of the claimed invention and therefore cannot be anticipatory. Accordingly, Applicant respectfully submits that the Examiner's rejection under 35 U.S.C. §102(b) has been traversed, and requests that the Examiner reconsider and withdraw of all of these rejections.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 06-1130.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above identified Deposit Account.

Respectfully submitted,

CANTOR COLBURN LLP

Applicant's Attorneys

By: 

David Arnold
Registration No: 48,894
Customer No. 23462

Address: 55 Griffin Road South, Bloomfield, Connecticut 06002
Telephone: (860) 286-2929
Fax: (860) 286-0115